

INTEGRATED COBALT SILICIDE PROCESS FOR SEMICONDUCTOR DEVICES

ABSTRACT OF THE DISCLOSURE

A method and apparatus are provided for forming a silicide on a semiconductor
5 substrate by integrating under a constant vacuum the processes of removing an oxide
from a surface of a semiconductor substrate and depositing a metal on the cleaned surface
without exposing the cleaned surface to air. The method and apparatus of the present
invention eliminates the exposure of the cleaned substrate to air between the oxide
removal and metal deposition steps. This in-situ cleaning of the silicon substrate prior to
10 cobalt deposition provides a cleaner silicon substrate surface, resulting in enhanced
formation of cobalt silicide when the cobalt layer is annealed.